IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF ALABAMA
SOUTHERN DIVISION

CLEON ABRAMS, SR., *et al.*,	)	
	)	
Plaintiffs,	)	
	)	
v.	)	**CIVIL ACTION 08-0068-WS-B**
	)	
CIBA SPECIALTY CHEMICALS CORPORATION, *et al.*,	)	
	)	
Defendants.	)	

ORDER

This matter comes before the Court on defendants' Motion in Limine to Exclude Expert Testimony, Opinions and/or Reports of Robert Scates (doc. 314). The Motion has been briefed and the Court has carefully reviewed the parties' memoranda and supporting exhibits.[1]

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[1] Defendants state that they believe a hearing would assist the Court, and that they wish to present their own experts' live testimony at such a hearing. (Doc. 314, at 16; doc. 344, at 1.) The decision of whether to conduct a *Daubert* hearing in a particular case is discretionary. *See, e.g., Corwin v. Walt Disney Co.*, 475 F.3d 1239, 1252 n.10 (11th Cir. 2008) (in *Daubert* context, "although they are often helpful, hearings are not prerequisite to such determinations under the Federal Rules or established law"); *Cook ex rel. Estate of Tessier v. Sheriff of Monroe County, Fla.*, 402 F.3d 1092, 1113 (11th Cir. 2005) ("the trial court was under no obligation to hold" *Daubert* hearing, which was "not required, but may be helpful in complicated cases involving multiple expert witnesses") (citations and internal quotation marks omitted); *United States v. Frazier*, 387 F.3d 1244, 1264 (11th Cir. 2004) ("a district court need not conduct a *Daubert* hearing in every case"). In this case, the Court exercises its discretion to rule on defendants' Motion without a hearing. Defendants have presented their position on the admissibility of Dr. Scates' testimony in extensive detail, including 22 pages of briefing and more than 70 pages of exhibits. Defendants state that they want the Court to hear what their experts have to say concerning Dr. Scates' opinions. But the Court has already done so, by reviewing Dr. David Langseth's five-page, single spaced affidavit; Dr. Paulo Zanetti's seven-page affidavit; and Dr. Michael Jennings' 11-page affidavit, all of which are directed at discrediting Dr. Scates' methodology and conclusions. The Court finds that a full-blown hearing on the reliability of Dr. Scates' opinions would not be beneficial, particularly in light of the relatively straightforward nature of the issues presented and the comprehensive manner in which defendants present their objections (including the specific written critiques of Dr. Scates'

I. Background.

Plaintiffs are owners of property in and around McIntosh, Alabama, who allege that their homes have been contaminated by DDT and its metabolites (collectively, "DDTr") emanating from a nearby chemical manufacturing facility owned and operated by defendants (collectively, "Ciba"). On that basis, plaintiffs have brought causes of action against Ciba sounding in trespass, negligence, and nuisance. Although they initially claimed damages in the form of diminution of their property's value, plaintiffs have since abandoned that theory of recovery, and are now seeking an award of compensatory damages for restoration costs, that is, the cost of reducing DDTr concentrations in their dwellings to a level of 10 parts per billion.

In support of their contention that Ciba tortiously contaminated their property, plaintiffs have proffered the expert opinions of Robert M. Scates, Ph.D., concerning issues of fate and transport, and likely sources of the DDTr observed at plaintiffs' properties.[2] The question that Dr. Scates seeks to answer is where the DDTr in plaintiffs' house dust came from.

In his initial expert report dated February 28, 2009, Dr. Scates set forth his methodology and conclusions concerning possible sources of plaintiffs' DDTr contamination. Using a fate and transport model, Dr. Scates opined that the potential major sources of DDT in plaintiffs' homes include the Ciba plant and agricultural use. The thrust of his opinion was that the contribution of the Ciba facility to DDTr contamination in plaintiffs' homes is far greater than agricultural application or any other identifiable source. In support of this conclusion, Dr. Scates undertook a multi-pronged analysis. The following examples are illustrative of his efforts. First,

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opinions proffered by three of their experts). This conclusion is reinforced by the principle that the Federal Rules of Evidence must "be construed to secure fairness in administration, ***elimination of unjustifiable expense and delay***, and promotion of growth and development of the law of evidence to the end that the ***truth may be ascertained and proceedings justly determined***." Rule 102, Fed.R.Evid. (emphasis added). For these reasons, defendants' request for an evidentiary hearing as to the admissibility of Dr. Scates' opinions is **denied**.

[2] Dr. Scates' *curriculum vitae* reflects that he holds a doctorate degree in the field of chemical engineering from the University of Houston, that he spent more than a decade providing engineering and technical support for various large corporations, and that he has been employed since 1996 as an engineering consultant performing technical environmental evaluations, characterizing industrial emission sources, analyzing the transport of chemicals in the environment, and performing environmental sampling. (Doc. 334, at Exh. 1.)

based on scientific literature as well as his review of Ciba documents, Dr. Scates calculated what he called "order-of-magnitude engineering estimates" showing that DDTr emissions from the Ciba facility in McIntosh far outstripped total agricultural usage of DDT in Clarke and Washington Counties during the period of 1950 to 1972. Second, Dr. Scates observed that the geographic proximity of plaintiffs' homes to the Ciba plant was far closer than to the boundaries of Clarke and Washington Counties. Third, Dr. Scates relied on interviews with Washington County farmers concerning the pervasiveness and locations of cotton farming in that area during the relevant time period, and noted that the central locations of cotton farming in Washington County were between 17 and 29 miles away from McIntosh. Fourth, Dr. Scates plotted the observed DDTr concentrations against a home's year of construction to demonstrate that concentrations fell drastically for homes constructed after Ciba's DDT production ceased but before agricultural usage stopped, again supporting the conclusion that agricultural use could not explain the observed patterns.[3]

Although Dr. Scates did not endeavor to quantify the relative or absolute impact of each potential pathway through which DDTr emissions could have left the Ciba plant and entered the surrounding community, he did identify those various pathways in his report and opine, often by reference to Ciba documents, that many of those pathways were viable in this case. Also, Dr. Scates examined a concentration profile of DDTr samples from the vicinity of the Ciba plant (an analytical tool also employed by defendant's fate and transport expert, Dr. David Langseth), and explained why, in his view, Dr. Langseth's analysis was flawed and why a proper construction and reading of that profile bolstered Dr. Scates' conclusion "that Ciba is the only significant source of DDT in the area." (Doc. 314, Exh. 6, at 8.)

On June 15, 2009, Dr. Scates submitted what he designated an "Expert Supplemental and Rebuttal Report." (Doc. 309, Exh. B.) In that report, he offered further opinions criticizing Dr. Langseth's analytical techniques, including explaining at length why, based on scientific literature and review of the data, he does not believe that Dr. Langseth's "fingerprint analysis" of

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[3] In that regard, Dr. Scates explained that, in his view, a more sophisticated statistical analysis of DDTr in home dust would not be useful because of the numerous pathways involved in carrying DDT to and from homes, and their unknown relative contributions.

the DDTr samples is beneficial in identifying the sources of the DDTr found in plaintiffs' homes. The Supplemental Report also addressed in some detail Dr. Langseth's contention that observed DDTr levels in plaintiffs' homes are commensurate with those found in other communities around the country, and supplemented Dr. Langseth's analysis with additional studies available in the extant literature. Based on his own examination of the DDT house dust studies, Dr. Scates opined that the relative contamination levels in McIntosh reflect that this community "is heavily contaminated from a source or sources other than typical domestic use." (*Id.* at 6.) Dr. Scates also examined other possible sources of DDTr contamination in plaintiffs' homes and explained, based on existing literature and historical data, why he concluded that "the historic use of DDT for forest pest control and mosquito control ... were of much smaller magnitude and shorter duration than either emissions from Ciba or agricultural use," and there was no evidence "that these two possible DDT sources were significant proximate to McIntosh." (*Id.* at 9.) Further, Dr. Scates presented the results of additional witness interviews in his Supplemental Report as evidence that significant quantities of DDT were being emitted from the Ciba plant by air during the relevant time period, as well as via dust accumulations on vehicles and on workers' clothes and bodies, thereby bolstering his conclusion that the Ciba plant was the primary source of DDTr contamination in plaintiffs' homes through various pathways.[4]

Defendants now seek to exclude all of Dr. Scates' opinions on the grounds that he is not qualified to offer those opinions, that his methodology lacks scientific reliability, and that his supplemental report is untimely.

II. Legal Standard.

The Federal Rules of Evidence, as construed by the Supreme Court in the landmark case

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[4] Defendants object that these witness interviews constitute "classic hearsay" that should not be "cloak[ed] ... in the guise of expert testimony." (Doc. 314, at 14.) The law is clear, however, that "hearsay testimony by experts is permitted if it is based upon the type of evidence reasonably relied upon by experts in the particular field." *United States v. Floyd*, 281 F.3d 1346, 1349 (11th Cir. 2002); *see also* Rule 703, Fed.R.Evid. If plaintiffs can lay the proper predicate, and if they can show that these facts' "probative value in assisting the jury to evaluate the expert's opinion substantially outweighs their prejudicial effect," Rule 703, Fed.R.Evid., then Dr. Scates will be permitted in his trial testimony to disclose these hearsay statements of witnesses to the Ciba plant's DDT contamination during the relevant time period.

of *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993), "require[] expert scientific evidence to be both reliable and relevant pursuant to Rule 702," such that it "appropriately assists the trier of fact." *United States v. Henderson*, 409 F.3d 1293, 1302 (11th Cir. 2005).[5] In that regard, "[t]he court serves as a gatekeeper, charged with screening out experts whose methods are untrustworthy or whose expertise is irrelevant to the issue at hand." *Corwin v. Walt Disney Co.*, 475 F.3d 1239, 1250 (11th Cir. 2007). This gatekeeping function is guided by the well-established principle that "[t]he proponent of the expert testimony carries a substantial burden under Rule 702" to show admissibility of that testimony by a preponderance of the evidence. *Cook ex rel. Estate of Tessier v. Sheriff of Monroe County, Fla.*, 402 F.3d 1092, 1107 (11th Cir. 2005); *see also Boca Raton Community Hosp., Inc. v. Tenet Health Care Corp.*, 582 F.3d 1227, 1232 (11th Cir. 2009) ("The offering party must show that the opinion meets the *Daubert* criteria, including reliable methodology and helpfulness to the factfinder ..., by a preponderance of the evidence.").

As a general proposition, "[i]n determining the admissibility of expert testimony under Rule 702, a district court considers whether (1) the expert is qualified to testify competently regarding the matter he intends to address; (2) the methodology by which the expert reaches his conclusions is sufficiently reliable as determined by the sort of inquiry mandated in *Daubert*; and (3) the testimony assists the trier of fact, through the application of scientific, technical, or specialized expertise, to understand the evidence or to determine a fact in issue." *United States v. Douglas*, 489 F.3d 1117, 1124-25 (11th Cir. 2007); *see also Maiz v. Virani*, 253 F.3d 641, 665 (11th Cir. 2001) (similar). That said, "[t]he rules relating to *Daubert* issues are not precisely calibrated and must be applied in case-specific evidentiary circumstances that often defy generalization." *United States v. Brown*, 415 F.3d 1257, 1266 (11th Cir. 2005). For that reason, courts have stressed that the *Daubert* inquiry is "a flexible one," that the *Daubert* factors are

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[5] Rule 702 reads as follows: "If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case." *Id.*

mere guidelines for applying Rule 702, and that "expert testimony that does not meet all or most of the *Daubert* factors may sometimes be admissible" based on the particular circumstances involved. *Brown*, 415 F.3d at 1267-68.[6] In performing a *Daubert* analysis, the Court's focus must be "solely on principles and methodology, not on the conclusions that they generate"; thus, it matters not whether the proposed expert testimony is scientifically correct, so long as it is shown to be reliable. *Allison v. McGhan Medical Corp.*, 184 F.3d 1300, 1312 (11th Cir. 1999).

III. Analysis.

Defendants argue that Dr. Scates' opinions should be excluded because the threshold requirements of qualification and reliability are not satisfied here. The Court will consider each of these arguments in turn.[7]

A. Dr. Scates is Qualified to Give These Opinions.

Ciba's first contention is that Dr. Scates is unqualified to render opinions in this case because of his close working relationship with plaintiffs' primary law firm, Reich & Binstock. In that regard, defendants point to evidence that Dr. Scates' business, Scates Engineering Consulting, works exclusively on litigation projects involving Reich & Binstock, and that his sole source of consulting income is his work for Reich & Binstock (with or without other

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[6] The Court also proceeds in recognition of appellate guidance that "a district court may not exclude an expert because it believes one expert is more persuasive than another expert" or "because it believes the expert lacks personal credibility because of prior bad acts or other prior instances of untruthfulness." *Rink v. Cheminova, Inc.*, 400 F.3d 1286, 1293 n.7 (11th Cir. 2005); *see also Smith v. Ford Motor Co.*, 215 F.3d 713, 719 (7th Cir. 2000) ("It is not the trial court's role to decide whether an expert's opinion is correct."). Such circumstances may provide fertile ground for cross-examination at trial, but they do not constitute a permissible basis for excluding testimony altogether under Rule 702 and *Daubert*.

[7] Defendants also suggest that Dr. Scates' Supplemental Report should not be considered because it is "untimely" and "an attempt to re-do his defective initial report." (Doc. 314, at 15.) This objection is meritless. The applicable Rule 16(b) Scheduling Order provided that expert rebuttal evidence "shall be made within 30 days after the disclosure made by the other party." (Doc. 67, at ¶ 6.) As summarized *supra*, the Supplemental Report was in large part a rebuttal of Dr. Langseth's expert report for defendants. Accordingly, defendants' characterization of it as a rewrite of Dr. Scates' initial report is not accurate. Moreover, the charge of untimeliness is unfounded, inasmuch as Dr. Scates' Supplemental Report was submitted within the time frame provided by the operative Scheduling Order.

plaintiffs' firms' involvement). (Doc. 314, Exh. 1, at 8-14; doc. 334, Exh. A, at 2.) On that basis, defendants contend that Dr. Scates "functions as an arm of [plaintiffs' law] firm," such that "[h]e is not an independent scientist providing analysis to the firm." (Doc. 344, at 2.)

Whatever else may be said, it is quite clear that Dr. Scates is qualified to offer expert opinions in the area of environmental fate and transport. Of course, "experts may be qualified in various ways. While scientific training or education may provide possible means to qualify, experience in a field may offer another path to expert status." *United States v. Frazier*, 387 F.3d 1244, 1260-61 (11th Cir. 2004); *see also Vision I Homeowners Ass'n, Inc. v. Aspen Specialty Ins. Co.*, --- F. Supp.2d ----, 2009 WL 4809877, *3 (S.D. Fla. Dec. 15, 2009) (qualification prong for expert testimony is "not stringent" in that "so long as the expert is minimally qualified, objections to the level of the expert's expertise [go] to credibility and weight, not admissibility") (citations omitted). Dr. Scates has both education and experience. As to the former, he holds multiple degrees (including a Ph.D.) in chemical engineering. As to the latter, he spent more a decade as a process and research engineer for large companies, and he has worked exclusively as an environmental consultant for the last 13 years, with a focus on characterization of industrial emission sources and transport of chemicals in the environment. On this record, defendants' assertion that Dr. Scates is unqualified to render opinions on DDT fate and transport in McIntosh cannot stand.[8] *See generally Maiz*, 253 F.3d at 665 (attack on forensic accountant's qualifications for *Daubert* purposes was "not convincing" where witness had Ph.D. in economics, extensive experience as professional economist, and substantial background in estimating damages, such that he was qualified to offer opinions on plaintiffs' economic losses).

In essence, defendants' qualification argument is that Dr. Scates' opinions should be excluded because of his close working relationship with plaintiffs' law firm. That's an argument about bias or credibility, not qualification. Of course, the law is clear that "it is not the role of the district court to make ultimate conclusions as to the persuasiveness of the proffered evidence.

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[8] Defendants point out that Dr. Scates holds no professional licenses, is not a registered professional engineer, and has not been certified as an engineer by any state agency (doc. 314, at 7); however, they do not explain why formal licensing, registration or certification is or should be properly viewed as a prerequisite for a highly educated and experienced chemical engineer to offer expert opinions as to environmental fate and transport.

... [V]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence." *Quiet Technology DC-8, Inc. v. Hurel-Dubois UK Ltd.*, 326 F.3d 1333, 1341 (11th Cir. 2003) (citations omitted). "[O]ne of the most generally accepted rules of all jurisprudence, state and federal, civil and criminal, is that the questions of *credibility* and *weight* of expert opinion testimony are for the trier of fact." *Hamer v. City of Atlanta*, 872 F.2d 1521, 1532 (11th Cir. 1989) (citation omitted). Defendants are, of course, free to cross-examine Dr. Scates about his motives and independence, but those queries speak to his credibility, not to his qualification to testify in the first instance.

B. Dr. Scates' Opinions are Sufficiently Reliable.

In addition to seeking exclusion of Dr. Scates' opinions under the qualification prong, defendants mount an extensive, multifaceted challenge to the reliability of those opinions. "Exactly *how* reliability is evaluated may vary from case to case, but what remains constant is the requirement that the trial judge evaluate the reliability of the testimony before allowing its admission at trial." *Frazier*, 387 F.3d at 1262.

As an initial matter, Ciba objects that Dr. Scates' opinions are mere statements of his conclusions, with no explanation of how the data supports them. According to Ciba, Dr. Scates "simply assumes that the plant is the source of the DDT with no attempt to quantify or compare the possible sources of DDT." (Doc. 314, at 9.) This characterization is counterfactual. As explained above, Dr. Scates' reports are clear that he identified potential sources of DDT in plaintiffs' homes, then analyzed an array of evidence (*i.e.*, computation of DDTr emissions from the plant and total agricultural usage of DDT in the community, relative proximity of plaintiffs' homes to Ciba plant and cotton fields, gradient of DDT concentrations with distance from Ciba plant, cross-referencing age of homes with DDTr concentration and comparison to time periods in which DDT was used agriculturally but not manufactured locally, recitation of pathways through which DDTr could reach plaintiffs' homes from Ciba plant, witness statements about agricultural usage and manufacturing emissions, and comparison of observed values in plaintiffs' homes to published studies of DDTr in house dust in other communities) in reaching his conclusion that the Ciba plant is the most likely source of that DDT. Contrary to defendants' hyperbolic assertion, the methodology and procedures undertaken by Dr. Scates cannot

rationally be described as being that he "assumes that the biggest source of DDT was the plant, so that has to be the source of the DDT on Plaintiffs' properties." (Doc. 314, at 10.)

Likewise unavailing are defendants' attempts to discredit Dr. Scates' testimony by reference to information that he did not have or details that were not known to him. For example, Ciba points to deposition testimony in which Dr. Scates acknowledged that he did not know the exact locations of plaintiffs' homes or the precise distance of any plaintiff's home from the plant site. (Doc. 314, Exh. 1, at 38-40.) Be that as it may, Dr. Scates' initial report relies on the facts that "[t]he distance between the Ciba source and plaintiff homes is on the order of 1.6 miles," while the areas in Washington County where extensive cotton farming occurred were between 17 and 29 miles from McIntosh. (Doc. 314, Exh. 6, at 4.) His point was that plaintiffs' homes are situated much closer to the Ciba plant than to the cotton fields where heavy DDT application occurred. In the context of this analysis, Dr. Scates' failure to plot the exact distances of each plaintiff's home from the Ciba plant, or to know the precise location of each, does not taint his opinions as unreliable for *Daubert* purposes. Similarly, defendants take Dr. Scates to task for not knowing the "screening value" for DDT, which pertains to the concentration of DDT at which it may adversely affect human health. However, they do not explain why that figure matters for fate and transport purposes, given that Dr. Scates' opinions are directed at the cause of the DDTr found in plaintiffs' homes, rather than the appropriate remediation target for minimizing its effects on the human body. Defendants criticize Dr. Scates for not calculating "whether the threshold friction velocity is sufficient to entrain DDT particles in the air" (doc. 314, at 9), but ignores Dr. Scates' reliance on witness interviews that DDT dust was pervasive in the air at the Ciba plant during the relevant time period (which could not have happened unless DDT particles were actually entrained in the air). This line of attack against Dr. Scates' testimony may have some limited usefulness on cross-examination, but it does not defeat the reliability of this opinions for *Daubert* purposes.

Nor do defendants advance their cause by leveling misleading accusations against Dr. Scates. In particular, Ciba contends that Dr. Scates "does not know how concentrations or frequency of DDT occurrences in McIntosh compared to any other communities." (Doc. 314, at 9-10.) Yet Dr. Scates' Supplemental Report addressed this very issue in considerable detail. (Doc. 309, Exh. B, at 3-6.) Next, Ciba lambastes Dr. Scates for "offer[ing] numerous

comparisons of the possible quantities of DDT manufactured at the plant ... with the DDT applied to crops in Alabama," which it suggests is a false and meaningless comparison. (Doc. 314, at 10.) But the actual comparison performed by Dr. Scates involved relative quantities of DDT emissions from the Ciba plant and DDT applied to crops in the vicinity of McIntosh, so this criticism is wide of the mark. As for defendants' assertion that Dr. Scates "has ignored numerous other possible alternative explanations" (doc. 314, at 10) for the DDTr found in plaintiffs' homes, defendants are again off base. Review of Dr. Scates' reports and his declaration submitted in connection with the *Daubert* motion confirms that, in fact, he considered those numerous other possible alternative explanations, and made specific findings showing why he deemed them not to be significant or helpful in this case.[9] That defendants disagree with his conclusions as to the import or potential value of alternative explanations does not support their incorrect assertion that he "ignored" them altogether.[10]

Having considered this plethora of secondary objections,[11] the Court now reaches the

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[9] By way of example, defendants maintain that Dr. Scates simply ignored evidence and allegations that DDT from an incinerator on nearby tribal land has reached plaintiffs' properties. (Doc. 314, at 10.) Yet Dr. Scates' declaration contains a specific, reasoned explanation for his conclusion that the incinerator "had no impact on DDT in homes in McIntosh." (Doc. 334, Exh. A, at 5.) Similarly, Dr. Langseth opines that, as for Dr. Scates' rejection of forest pest control and mosquito control as significant contributors to the observed DDT concentrations, "[e]xperts in chemical fate and transport would not render such an opinion based on their lack of information." (Doc. 314, Exh. 9, at ¶ 10.) But that's not what Dr. Scates did. He discounted those contributors not because he didn't know anything about them, but because his review of historical literature revealed that DDT application for those purposes was "of much smaller magnitude and shorter duration than either emissions from Ciba or agricultural use" (doc. 309, Exh. B, at 9), and there was no evidence of any significant usage of DDT for those purposes proximate to McIntosh.

[10] Another example of this kind of facially meritless objection is defendants' contention that Dr. Scates' testimony is unreliable because he did not replicate Dr. Langseth's method, which was to "analyze[] the pattern of sampling results to determine if there is a pattern and then to compare to results in other communities." (Doc. 344, at 3.) In fact, that is precisely what Dr. Scates did. (Doc. 309, Exh. B, at 3-6; doc. 314, Exh. 6, at 8; doc. 334, Exh. A, at 3-4.)

[11] Counsel's blunderbuss approach to this Motion is unhelpful and inefficient, inasmuch as it effectively forced opposing counsel and this Court to wade through stacks of weak ancillary arguments before reaching the most substantial challenges to Dr. Scates' testimony. Rather than submitting every possible argument that comes to mind, it would be

heart of defendants' reliability argument, which comes in two parts. First, Ciba excoriates Dr. Scates for not quantifying the amount of DDT emanating from Ciba's plant pursuant to specific pathways, or the amount of DDT that reached each plaintiff's home from the Ciba plant. Second, Ciba contends that Dr. Scates' material balance calculations relating to DDT emissions from the Ciba plant are hinged on assumptions that lack any basis in science or engineering, so as to render them unreliable.

The quantification objection is, essentially, an argument that Dr. Scates did not go about his fate and transport analysis in the right way. Conceptually, what Dr. Scates did was to assemble a collage of evidence regarding the different potential sources of DDT on plaintiffs' property, then analyze that evidence to eliminate certain explanations and credit others. In concluding that the primary source was the Ciba plant, Dr. Scates considered both evidence that affirmatively supported the Ciba plant as the source, and a process of elimination that rejected or minimized all other alternative sources. As to methodology, Dr. Scates reviewed numerous documents and peer-reviewed literature, interviewed witnesses, and performed calculations and analysis of sampling and other data. With regard to pathways, Dr. Scates' opinions are really limited to the statement "there are multiple legitimate pathways from [the Ciba plant source] to homes in the McIntosh community." (Doc. 334, Exh. A, at 4.) In other words, Dr. Scates' pathway analysis was confined to his opinion that there were qualitatively viable pathways for transporting DDT from the Ciba plant to plaintiffs' homes, without regard to the quantities of DDT supported by each such pathway. This qualitative determination was simply one element of the collage, a supporting opinion rather than the focal point of the analysis.[12]

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advantageous for all concerned for counsel to filter out the weaker arguments and focus on only the stronger ones. Presenting them all indiscriminately creates unnecessary burdens, and runs the risk that the stronger arguments may get lost in the shuffle.

[12] Another way to think about it is as follows: As described *supra*, Dr. Scates analyzed numerous lines of data and literature to reach his conclusions that the Ciba plant was a compelling source of the DDT found at plaintiffs' homes and that the other alternative explanations lacked persuasive power. His opinion is that the DDT had to originate from the Ciba plant because the evidence supports that explanation, but does not support the alternatives. Obviously, in the absence of any pathways through which DDT from the Ciba plant could have been transported to plaintiffs' homes, those conclusions would be faulty. So he used a fate and

Defendants' point is, at its core, that they think the collage should have been composed and synthesized differently. Defendants believe that Dr. Scates should have focused his efforts on quantifying the travel of DDT along particular pathways to particular locations, via air dispersion modeling or otherwise. Defendants' objection is perhaps best encapsulated by the following statement by Dr. Zannetti:

> "Scates by his own testimony equates the presence of a material at both the Ciba plant and Plaintiffs' homes, together with the existence of a possible pathway, as proof that the material moved from one site to the other and Ciba is the dominant cause. However, such a conclusion cannot be reached without the additional evidence that the claimed movement of a material in fact occurred and represents the dominant factor."

(Doc. 314, Exh. 10, at 6.) Certainly, Dr. Scates could have prepared, or caused another expert to prepare, an air model, much as Dr. Zannetti did for defendants. He could have worked to quantify the DDT traveling along particular pathways to particular receptors. But *Daubert* does not inflexibly demand quantification of expert opinions in order for them to be admissible. *See generally Brown*, 415 F.3d at 1267 ("[t]he inquiry envisioned by Rule 702 is, we emphasize, a flexible one") (citation omitted); *Maiz*, 253 F.3d at 669 ("[T]here is no question that an expert may still properly base his testimony on professional study or personal experience," as opposed to "verifiable testing or studies.") (citation and internal quotation marks omitted). Ultimately, a serious defect with defendants' reliability objection is that they fail to explain why quantification of particular pathways is a mandatory, lock-down prerequisite for any valid environmental fate and transport analysis.

Furthermore, contrary to Dr. Zannetti's quotation set forth above, and the general thrust of defendants' objection, Dr. Scates' opinion is <u>not</u> simply that (a) there was DDT at the Ciba plant, (b) there is DDT at plaintiffs' homes, and (c) there is a possible pathway between them,

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transport model to describe qualitatively how DDT could indeed have traveled on these pathways to reach plaintiffs' homes, thereby lending further support to his underlying conclusions as to the relative viability of the various proffered sources of the DDTr contamination found in plaintiffs' homes. The specific dominant pathway was not important to Dr. Scates' analysis, only the fact that viable pathways existed. Stated differently, Dr. Scates did not so much use the pathway analysis to identify the Ciba plant as the source of the DDT as he used it to reinforce the conclusion he had already reached from other types of data and analysis.

therefore (d) the Ciba plant must be the source of the DDT at plaintiffs' homes. A critical point overlooked by defendants in their reliability analysis is that there is more than one way to establish causation. To be sure, quantification of DDT particles on particular pathways would achieve that result. But it's not the only means of showing that the Ciba plant caused plaintiffs' homes to be contaminated. Dr. Scates determined causation not by merely assuming it to be so, but by evaluating various possible sources for the DDT. By reference to an array of materials (sampling patterns, Ciba documents, peer-reviewed literature, historical documents concerning DDT usage for various purposes, witness accounts, etc.), he concluded that the alternative explanations for how the DDT reached plaintiffs' homes are not viable, and that the only explanation consistent with the data and the literature is that the Ciba plant must be the source. Just because Dr. Scates utilized a different method than defendants would have done to establish causation does not mean that he simply assumed causation (as Dr. Zannetti suggests), nor does it render his methodology unreliable or his opinions inadmissible.[13]

In short, then, the DDTr on plaintiffs' property had to come from somewhere. Dr.

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[13] Nor is this result undermined by defendants' persistent disparagement of Dr. Scates' methodology as "not how a true scientist would go about determining the source of DDT on Plaintiffs' properties" and "not the way a true scientist would approach this analysis." (Doc. 314, at 11, 12.) While no useful purpose is served by quibbling over semantics, it bears noting that admissible expert testimony is not confined to "true science." *See, e.g., Frazier*, 387 F.3d at 1260 ("The trial courts are also required to play the same gatekeeping function considering the admissibility of *technical* expert evidence."); *Maiz*, 253 F.3d at 669 ("*Daubert* applies to all expert testimony, not just 'scientific' testimony ...."). Equally unavailing is defendants' lament that Dr. Scates' methodology is "impossible to test or replicate" without quantification of pathways. (Doc. 314, at 12.) As defendants' own expert affidavits demonstrate, many aspects of his methodology are indeed subject to testing and replication, as where defense experts have replicated and disputed his material balance calculations or his gradient analysis. And to the extent that Dr. Scates' opinions are derived from literature review, witness interviews and data analysis, they are not automatically rendered unreliable by their non-susceptibility to empirical verification. *See American General Life Ins. Co. v. Schoenthal Family, LLC*, 555 F.3d 1331, 1338 (11th Cir. 2009) ("Standards of scientific reliability, such as testability and peer review, do not apply to all forms of expert testimony," and court has discretion to deem expert testimony reliable based upon personal knowledge or experience); *Maiz*, 253 F.3d at 665-66 (rejecting as unpersuasive defendants' argument that accounting expert's calculations of plaintiffs' losses were unreliable because he was unfamiliar with individual plaintiffs and adopted a damages theory that was "essentially unverifiable").

Scates' wide-ranging review of data, documents, literature and witness statements led him to form the opinion that it could not have come from the other possible sources, and that the Ciba plant was the only source that is consistent with the evidence. Given those circumstances, his failure to perform an air dispersion model or other quantification method of how much DDT left the Ciba plant and reached the plaintiffs' homes via the air pathway is not fatal to the reliability of his expert opinions.

Defendants' other principal *Daubert* objection to Dr. Scates' opinions is that the assumptions underlying his materials balance calculations for DDT emissions from the Ciba plant are "completely without support," "completely incorrect," and have "no basis in science or engineering." (Doc. 314, at 12-13.) In his initial report, Dr. Scates analyzed DDT production and processing figures from Ciba annual reports, which in his view "form a credible engineering basis to calculate annual order of magnitude estimates for total DDT emissions from the Ciba facility." (Doc. 314, Exh. 6, at 3.) Essentially, Dr. Scates began with the premise that "total hydrocarbon mass into the front of the plant is equal to the total hydrocarbon mass leaving the plant by all routes." (Doc. 334, Exh. A, at 5.) He then used Ciba data to compute the difference between total hydrocarbon mass into the plant (*i.e.*, the material inputs used in making DDT) and total DDT product, opining that the resulting figure equals wastes and emissions composed of DDT, monochlorobenzene and chloral. (*Id.* at 6.) He then applied a "reasonable engineering estimate" that DDT emissions constituted 50% of the total calculated emissions and wastes from that process. (*Id.* at 6.) Using that methodology, Dr. Scates estimated total material losses per year from the Ciba facility during the 1958-1965 period as being on the order of 2 million pounds, with DDTr emissions being "on the order of 50% of this value." (*Id.* at 4.) For the 1952-1957 period, Dr. Scates scaled from available unit production figures to estimate DDTr emissions as being on the order of 0.5 million pounds per year.

Defendants contend that Dr. Scates' calculations of DDTr emissions from the Ciba plant are erroneous because they disagree with his assumptions. In particular, defendants (using the Affidavit of Michael Jennings (doc. 314, Exh. 11)) contend that Dr. Scates misapplied the concept of yield; ignored recycled reactants in the manufacturing process (which are neither wastes nor emissions); improperly relied on so-called AP-42 standards to estimate DDT emissions from flaker, grinder and packaging operations at 2% of material processed; and

offered an unfounded assumption that 50% of emissions from the Ciba plant were DDT. The Court has reviewed these objections carefully, as well as Dr. Scates' rejoinder to Dr. Jennings' critique of his calculations.[14] It may very well be that his results are incorrect. Certainly, his assumptions are subject to challenge on cross-examination. But the Court cannot find that Dr. Scates' materials balance calculations (which are intended only as approximate, order-of-magnitude estimates of total DDT emissions from the Ciba plant) fail to meet the reliability threshold under *Daubert* and Rule 702. Dr. Scates has drawn on his engineering education and experience, published literature and government standards, Ciba documents, sampling results and witness interviews to perform what he readily admits is a rough estimate of DDT emissions from the Ciba plant. While Dr. Jennings' rebuttal that any emissions calculation from the Ciba plant "would require the inclusion of much additional data, none of which [Dr.] Scates had or has attempted to utilize where he does have it" (doc. 314, Exh. 11, at 10) is appreciated, Dr. Scates is not trying to pass off his DDT emissions calculations as precise or exact. He is essentially making back-of-the-envelope calculations to reach a ballpark emissions figure using incomplete data from a half century ago, and filling in gaps with assumptions drawn not from thin air (as defendants accuse) but from his own professional expertise. That those assumptions are admittedly imprecise and subject to second-guessing on cross-examination does not render the entire order-of-magnitude opinion testimony of Dr. Scates unreliable. Recall that "the proponent of the testimony does not have the burden of proving that it is scientifically correct, but that by a preponderance of the evidence, it is reliable." *Allison*, 184 F.3d at 1312. That threshold is satisfied here, and it will be for the jury to decide how much stock to place in Dr. Scates' testimony on this point.

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[14] For example, Dr. Scates replies that recycled reactants have no bearing on the calculation of emission losses (presumably because of the protracted time period over which emissions were calculated, inasmuch as, over time, recycled reactants are neither inputs nor outputs in the materials balance because they remain "in the system" throughout), that the AP-42 standards are appropriate because they were developed by the EPA as a compilation of measured emissions from a variety of chemical and industrial processing facilities, that the 50% figure is simply a "reasonable engineering assumption" to compensate for data that does not exist, and that the veracity of his order-of-magnitude calculations is borne out by eyewitness testimony about the prevalence of DDT dust in and around the Ciba plant, as well as the extremely high DDT levels found in soil and mud on or near the Ciba plant.

IV. Conclusion.

For all of the foregoing reasons, the Court finds that the proffered opinions of Dr. Scates satisfy the qualification and reliability requirements for admissibility, notwithstanding defendants' many objections to same.[15] Accordingly, defendants' Motion in Limine to Exclude Expert Testimony, Opinions and/or Reports of Robert Scates (doc. 314) is **denied**.

DONE and ORDERED this 2nd day of March, 2010.

s/ WILLIAM H. STEELE
CHIEF UNITED STATES DISTRICT JUDGE

[15] Although not addressed in detail in the parties' filings, a third criterion for admissibility is that the proffered expert testimony must assist the trier of fact, meaning that "it concerns matters that are beyond the understanding of the average lay person." *Frazier*, 387 F.3d at 1262. The question that Dr. Scates is trying to help the jury answer is a simple one: Where did the DDT in plaintiffs' homes come from? Notwithstanding defendants' disagreement with his results, and their belief that an alternative methodology should have been used, the Court is left with the firm conviction that Dr. Scates' opinions as to fate and transport of DDT in McIntosh, which synthesize multiple lines of evidence using his expertise as a chemical engineer and environmental consultant, will assist the trier of fact in answering that question.